COST ENGINEERING

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WHAT'S INSIDE

KEY ECONOMIC DATA ON CORPS PROJECTS VIA COST ENGINEERING OFFICES

By John Bivona, CEMVN-ED-C

Cost Engineering offices possess a wealth of engineering and construction data, data that assists engineers and project managers on a daily basis. But our offices also contain significant construction cost data that contributes to the economic impact of our community.

The New Orleans District Cost Engineering Branch analyzed data from its bid openings on civil works construction projects (excluding dredging projects) for the last three fiscal years with research emphasizing key economic elements such as on-site labor, field overhead, and project-related engineering services – all factors contributing to an immediate economic impact in a community.

From the last three fiscal years, 100 construction projects were studied (totaling $ 400M) and key economic results from research into these construction projects in the New Orleans District indicated the following:

a) For every $ 1M spent on Corps construction projects, there is $250,000 generated in wages to the local economy from on-site construction jobs.

b) For every $ 1M spent on Corps construction projects, there is a minimum of 15-20 on-site construction jobs added to the community.

c) For every $ 1M spent on Corps construction projects, the local engineering support community (i.e., services supplied by the A-E firms, soil labs, surveying companies, and other technical support on construction projects) receives approximately $50,000.

This data clearly illustrates the immediate economic impact that Corps projects have on the local economy that is beneficial to the community, the local sponsor, and the Corps of Engineers. And it is such research – available from every cost engineering office – that can assist the Corps of Engineers and its customers in recognizing the additional value of each construction dollar.

FUDS COST TO COMPLETE ESTIMATES

By Jim Peterson, HTRW CX

The HTRW CX is currently completing its quality control/quality assurance reviews for the FUDS Cost to Complete initiative this year. Our reviews revealed that a number of cost engineers are actively involved in the development of FUDS cost to complete estimates. Some districts, however, use other technical disciplines to prepare the estimates. We encourage the cost engineers from districts with FUDS missions to actively pursue the development of FUDS estimates by coordinating with FUDS project and technical managers. FUDS cost training sessions were held last spring to better prepare districts for development of the estimates.

The HTRW CX will be conducting more training sessions this coming March-May 2002 timeframe to better equip cost engineers in the use of RACER to develop FUDS estimates. The sessions will last 2 days. More particulars will be provided when the dates and location

for the sessions are established. These sessions will concentrate on the use of updated FUDS Ordnance and Explosive models, and other model and software enhancements. We recommend that cost estimators developing FUDS estimates that have not previously had RACER training attend one of these sessions. If you have any questions, please contact us at the HTRW CX for further information.

KAREN SCHOFIELD ACCEPTS POSITION ON TRACES TEAM

By Larry Werner, Huntsville Center

We are pleased to announce that Karen Schofield has accepted the GS13 Interdisciplinary Engineering position that was previously filled by Terry Patton who was reassigned as the project manager for the Corporate Business Plan/P2 project.

Karen is a Tri-Service Certified Cost Consultant and comes to us from the New England District of the North Atlantic Division. She has worked in the New England District cost engineering office since 1994 and prepared cost estimates for Civil Works, Superfund, HTRW, and Military Construction projects. She has been a member of the Unit Price Book and MCACES 32 Bit (M32) review teams and was the Cost Engineer of the Year for 2000.

Karen will perform project and technical management duties for the Unit Price Book, Life Cycle Cost and parametric modules. She will provide backup to Jim Nichols on the MCACES module.

We welcome Karen to the TRACES Team and look forward to her arrival on 15 October 2001.

CONGRATULATIONS!

By Chris Lindsay, CENAE

Congratulations to Karen Schofield, Cost Engineer of the Year 2000. She is moving from New England District to the warmer climes of Huntsville where she has been selected/accepted the position of GS13 Interdisciplinary Engineer on the TRACES Team. She will be sorely missed in NAE, but we wish her the best.

Chris Lindsay and John Yen

TRACES ENGINEERING CHANGE PROPOSAL (ECP) SYSTEM AVAILABLE FOR USE

By Larry Werner, Huntsville Center

The TRACES EPC system is currently available on the TRACES Web Page at the following URL: http://www.hnd.usace.army.mil/traces/ecp/ . The ECP system is used to develop and track bugs, changes, and/or proposed enhancements for TRACES modules. The system permits any cost engineer to enter a requested change to any of the TRACES modules. In addition, the system allows you to view any ECP that has been entered into the system and check the current status. The process for reviewing an ECP is defined by the Configuration Management Plan, which can be accessed at the following URL: http://www.hnd.usace.army.mil/traces/cmp.htm. This process provides for review of each ECP entered in the system by points of contacts (POCs) for each TRACES module. The names of the POCs are provided in the above plan. The lead POC for the module of each ECP then determines the merit, categorizes and comments on the ECP. After this review process, the Huntsville assigned responsible agency (ARA) or Walla Walla District Director of Expertise (DX) will then determine the cost and scheduled time to implement the ECP. The ARA or DX then forwards the ECP to the TRACES Configuration Control Board (CCB) where the ECP is disapproved or approved and prioritized. Approved ECPs are implemented after funds have been set-aside during the annual TRACES budget review.

If you have any questions or areas for improvement, please let us know.

COST ENGINEERING FIELD ACTION CADD GROUP

By Gareth Clausen, Walla Walla District

STATEMENTS

The Cost Engineering Field Action CADD Group (CFAC) is comprised of cost engineers and estimators whose purpose is to enhance all Corps District's CADD usage through the dissemination of information, sharing of resources, and collaborative efforts as necessary. The over-arching goal of the CFAC is to integrate Cost Engineering with Computer Aided Design and Drafting (CADD) to enable cost engineers to work in the CADD environment.

The USACE perspective is to use Computer Aided Design and Drafting (CADD) technology intelligently to provide optimum products and services to our customers, delivering completed projects "better, faster, and cheaper," concurrently

integrating this use with other engineering automation tools.

Working from this perspective, the goal is to execute all Corps of Engineers design, engineering, and construction missions using various state-of-the-art CADD systems (commercial hardware and software) and one industry-wide, National CADD standard.

WHAT'S UP

Those are the official statements for the CFAC group and CADD technology. What these statements don't discuss is that the cost estimating future is changing dramatically. Lost positions over past years demand that we accomplish our tasks "better, faster, and cheaper". Corps Cost Engineering will be challenged to address industry CADD standards in our standard cost databases.

The last giant leap in engineering design was the implementation of CADD and GIS. Currently and historically two-dimensional paper and raster drawings are the standard product of design. However, design is moving to 3D utilizing intelligent objects. These intelligent objects "know" what they are, how they fit into the design, and their cost. The future challenge is the integration of intelligent object design with cost estimating. Several commercial CADD (3D) design programs generate quantity and cost data directly as the design is created and export this information to compatible estimating software.

Changes within the Corps' Cost Engineering activities will be equally dramatic. With the advent of M32 (no official name yet) we can put to rest our DOS-based old Gold 530. The ability to associate CADD information to "M32" line items and assemblies will soon follow. How that association will develop is Cost Engineering's new challenge.

Imagine a Cost Engineering office totally paperless, files and documents stored electronically, quantity take-off from electronic drawings (CADD or raster), and all information shared through your PC. This is not imaginary for Mr. Steve Kemp, Chief Military Estimating Section, Omaha District. His office is progressing rapidly to fully implement this paradigm.

PROJECT

The CFAC submitted the FY01 project: Evaluate Quantity Takeoff for CADD-COST Software Integration. The project was approved and is nearing completion. Evaluation of commercial quantity take-off software is the object of this project. Our team met at the Fort Worth District and viewed several software demonstrations and identified evaluation criteria (questions) that included the following:

- Does the program maintain a clear and reproducible Audit Trail? Does the program maintain information for an independent take-off check or provide for redlining for design changes? Does the program have a way to create a backup, maintain links between drawing and take-off information, and ability to change symbols and take-off notations?
- Can the take-off program export to common database and spreadsheet programs in the windows environment? Are there intermediate exporting steps or can the take-off program populate databases and spreadsheets directly?
- Initial program cost. Are site licenses and or individual stand alone licenses available.
- How versatile is the take-off program. Are work breakdown structures fixed or open and modifiable? Does the program allow for a range of template capability?
- Are viewing layers and take-off levels possible?
- How would the program rank in terms of ease of use or how user friendly is the take-off program? Can the program show multiple views? Is there ability to capture or annotate quantities in the third dimension (3D), i.e. vertical drops or returns into the paper?

- Is training provided and how difficult may it be to learn the software program?
- Can the program read vector format drawings on screen and allow for scaling directly from the drawing?
- Can the program read raster tiff and cal format drawings on screen and allow for scaling directly from the drawing?
- Is the software open and not proprietary? Is it open to use 3rd party data and what are the possibilities for immediate modification for Corps of Engineer's applications? Is there a free drawing viewer module?

FUTURE

The CFAC group anticipates the project results to be released through the WES Technology Center early in FY02. Next year (FY02) the group will focus on a Corps-wide implementation of electronic quantity take-off. We have been encouraged to work with and through each MCACES Point of Contact (POC) at each District and are looking forward to each MCACES POC to champion implementing CADD Cost integration in each District. Remember, as Cost Engineers we identify dollars and sense out of designs.

For information regarding Cost / CADD, contact any of the CFAC group members or visit the Cost Eng Field Action (CFAC) at this web page: http://cadd.wes.army.mil/

David Brown, CESAS-EN-C, 912-652-5589
Arthur Belanger, CESPK-ED-C, 916-557-6972
Milton Schmidt, SWF-EC-CE, 817-978-2291, 1907
Dan Long, CEHNC-ED-ES-C, 256-895-1841

WELCOME ABOARD JACK

By Roy E. Braden, HQ, CECW-EI

I would like to take this opportunity to welcome Jack Shelton to the Engineering and Construction Division, Directorate of Civil Works, HQUSACE. He will be leaving the Lone Star State of Texas, where he was Chief of Cost Engineering for the Southwestern Division, and joining the HQ team around 10 September 2001. He will be assigned to the Cost and Economic Team within Infrastructure Branch.

Some of his responsibilities will be to provide cost engineering support and oversight for the Civil Works Program, manage the annual review of project construction cost estimates (DD1391 & ENG3086) prior to inclusion into the Army's Military Construction (MILCON) budget; and maintain and develop historical cost information based on actual construction data, bid abstracts, and cost estimating reports.

Jack brings a wealth of experience and knowledge in cost engineering to the Headquarters that will help insure that we provide effective guidance and support to all the Districts and Divisions throughout the Corps.

Jack is a Graduate of the University of Texas at Arlington with a BSME in 1972 and is a registered Professional Engineer in Texas (1979). He started his career with the Corps of Engineers, at the Ft. Worth District in 1973 in the Operations Division and then moved into Cost Engineering in 1977

Jack was one of the original Prospect Class instructors for the initial CACES cost engineering software program in the early 1980s, when we used mainframe computing and the old IBM cards.

In 1988 Jack was promoted to Southwestern Division Cost Engineer. This was the first time that SWD had a cost engineer - rather than someone who just handled cost engineering issues.

Some Noteworthy Milestones:

- Appointed team leader for the SWD DD1391 Certification effort from its inception in early 1990's.
- Served as the team leader for the validation of the Chem-Demil cost estimate for the demilitarization of chemical weapons. Including Jack, the team had cost personnel from SWD, SAD, Mobile, Kansas City and Ft. Worth mobilized for this effort.
- Served as team leader & cost engineer for the SWD effort to validate and prepare the cost and scope portion of the 1391 for the Air Force MAJCOM AFMC. This effort to help the AF in their programming has really paid off by providing the various Corps districts with adequate funding for their projects.
- Awarded Cost Engineer of the Year 1994/1995.
- Serves on the Tri-Service Cost Engineering Certification Board and is a Tri-Service Certified Cost Engineer.
- At the request of the SWD military districts, organized the SWD Regional DD1391 Preparation Team. Provided Division oversight/guidance while the districts actually did the work. The teams travel to the installations and assist the master planners in the preparation of their DD1391's.
- Jack & his wife Wanda have one daughter, and one grandson and granddaughter (twins). Jack's hobbies are hunting and fishing.

COST RISK

by Rex McLaury, Huntsville Center

Background:

Cost Risk is a risk analysis tool that interfaces with RACER and PACES parametric cost estimating programs. Cost Risk also allows one to develop stand-alone estimates using one of several WBSs for related construction types (Military, Civil Works, HTRW, etc). The contractor, Talisman Partners, Ltd., developed the software following stringent design guidance (Cost Risk Concept Design Report) that was prepared by Dr. James Diekmann (professor from University of Colorado). The Cost Risk Development Team included DoD and DoE personnel and technical support/reviewers. Dr. Diekmann provided valuable cost engineering expertise during the developmental phase to ensure both logic and "usability" of Cost Risk was consistent with Cost Engineering software used today. Cost Risk, however, must be used with a commercial-off-the-shelf add-on to MS Excel namely, Crystal Ball 2000. Crystal Ball is the computational engine "workhorse" for the Cost Risk program. Handling complicated math processes subjected to a technique known as Monte Carlo simulations, a report can be generated evaluating the entire range of results possible for a given situation. The Corps of Engineers has purchased a few copies of the Crystal Ball 2000 and Rex McLaury should be contacted to obtain this package. This is useful to the decision-maker as it allows them to determine the "riskiness" of a project and set forth an appropriate contingency amount for a given level of confidence.

Latest:

The current version of Cost Risk is 1.2 and is available to each Army Corps District via "request-only" basis. No formal training or hotline support is available for Cost Risk so districts must understand that evaluation will be done on their own account until a more formal training setting is established (currently in the FY02 budget). In the meantime, HNC will be taking request for

Cost Risk training and it is possible to provide districts with a pilot workshop training session at their site similar to what has already been done for DoE. Once formal training workshops and development of training material have been completed, tested, and approved, HNC (working with DoE) will be looking into providing a more convenient way to obtain training. Using a common industry practice of training, such as Computer Base Training (CBT), districts will be able to request and obtain a CD-ROM from HNC to learn Cost Risk at their own pace. The benefit to districts will be lower cost of scarce training funds. More information will be provided at a later time/date.

HAG

by Rex McLaury, Huntsville Center

The current HAG version 2.1 is the latest release and is Y2K compliant. The latest database is HAG2001a.hgh and is available on the TRACES FTP site (http://www.hnd.usace.army.mil/traces/whats-new.asp).

Don't forget to provide new HAG data to the HAG FTP site specifically for uploading of new and/or revised project data files. It is a very simple process and eliminates the confusion of who to send data to. Just ensure that your HAG project data, completed to Level 2 (minimum), is uploaded to the FTP site to guarantee inclusion into latest official database.

As mentioned earlier, there is no need to send HNC the whole HAG database, which has your new data added. Instead, just submit your new projects only. A reminder, please do **not** send facilities that have $/LS, as this info has no usefulness for HAG database and is a waste of time for the sender. Although okay, it is not necessary to send facilities that are alterations, additions, and the like since this data is only a benefit for your records only.

It is to everyone's benefit that we provide accurate data for the HAG database. The data is used by the Tri-Services to validate OSD pricing guidelines. The data is also used to verify the number of contractors typically bidding on projects at each installation; thus updating the ACF matrix factors number of bidders for each installation. If the data submitted is insufficient or not submitted then there is no way to validate the unit cost pricing guideline nor to validate the number of bidders for the ACF, each which may have impact on future work while preparing budgetary costs for new projects.

Latest News:

Currently, we are developing new HAG enhancements and the scheduled release date for review will be 28 September with final release/distribution via FTP site on 31 October 2001. Basically, the only "new" enhancement will be a filter button to separate metric and English UOM prior to running OSD report while the rest of the task order will be to provide better documentation and user functionality. The new HAG version will be 2.2.

TRACES WEB PAGE

By Rex McLaury, Huntsville Center

Reminder - there have been several additions to the TRACES Web Page. These can be found on the TRACES "What's New" page. These changes were made to provide you a better means to support and/or distribute information. These enhancements are:

1. **Tri-Service Cost Estimating Calendar.** This calendar is currently available for your use in scheduling events, meeting dates, etc. To access the calendar go to the TRACES

Web Site: http://www.hnd.usace.army.mil/traces/whats-new.asp, and then go to middle right hand of table and click the calendar icon. If you have information to add to the calendar, please contact Ms. Jan James, 256-895-1832.

2. **ECP (Engineering Change Proposal)**. This software is available via: http://www.hnd.usace.army.mil/traces/ecp/ and will be the method we use to develop and track bugs, changes, and/or proposed enhancements throughout the complete review and development cycle. This software will allow you to input new requests, query the status of requests, and find out when a proposed change is projected to be implemented once it has been approved. At this time we are currently implementing the system. To create/submit an ECP, please visit: http://www.hnd.usace.army.mil/traces/cmp.htm and review the configuration management plan (also available for download). Since implementation, we have received numerous ECPs. Some have even been requests to improve the ECP system. Please use the ECP system to log your request in the "Que" as this will be the only way in which to track request in the order they are received to use for programming funds for future enhancements.

3. **FAQs (Frequently Asked Questions)**. Currently available on TRACES Web Page at: http://www/traces/faq/Trachead.asp is a site for the purpose of proposing questions and obtaining support from the field concerning resolutions to TRACES Software. This is a way that we can help each other resolve problems we are experiencing. The FAQ software will have the flexibility to perform database searches based upon keyword phrases or relevant topics. This will be a database for users to locate information provided by other Corps folks regarding software problems, patches, fixes, updates, improvements, etc. The nice thing about this system is it will allow searches on just about any word, work phrase, error message, letter, etc. If anyone had encountered such a problem, it will be in the database, that is, if it had been recorded. Those questions not having a resolution will be available to you for answer in the pending questions area. The master database will be maintained by HNC for accuracy while the pending file will allow you to reply with solution. Please make use of it for the benefit of all Corps folks, as this site will provide everyone a quick way to obtain answers to common user questions.

4. **Username and passwords, Software and FTP site access.**

Everyone will be receiving (or should have received) new username/password, which allows one access to the TRACES FTP site in which to download latest software and databases. Also as one knows, the FTP site can provide a means for you to share large database files that can't be transmitted via email. The FTP site is open to any cost engineer, once they have obtained a username and password. If you are having trouble accessing the FTP site, contact either Rex McLaury, 256-895-1833 or Jan James, 256-895-1832.

AE firms may obtain access to the TRACES software, databases, and FTP site and must refer to http://www.hnd.usace.army.mil/traces/ (TRACES Web Page SOPs, Downloading Files, and MCACES SOFTWARE Registration) for additional information on how to request software. We will address two different scenarios, one for AE firms who don't have a current contract with the Corps of Engineers and the other for those AE firms who do have active contracts. Those contractors who do not have current contracts will only be allowed to download the MCACES Gold 5.31, MFW 1.2 and/or the 1995 Unit Price Book database. These firms will not be given access to the TRACES FTP site. For those contractors who do have a current contract, validated by the district

office, we will provide the following: 1) access to the same software and databases as those contractor not validated, 2) a folder on the FTP site where the AE can access, upload and download files, and 3) the latest UPB database. Those validated contractors will only be able to access those folders set up specifically for them plus the district office will have access to the same folder. Thus the AE firm and the district office can transfer information across the internet and avoid the problems associated with e-mail virus checks, etc.

HOUSTON-GALVESTON SHIP CHANNEL PROJECT

By Jackie Lockhart, Galveston District

The Cost Engineers in Galveston District have been keeping themselves very busy, in fact they have enlisted the help of sister districts Tulsa and Little Rock to help out with the workload. Two more sections of the authorized Houston-Galveston Ship Channel Project are coming up for bid opening. There is the usual feasibility studies: Corpus Christi Ship Channel deepening and widening, Sabine-Neches Waterway deepening and widening Study, Clear Creek Flood Control Study, Greens Bayou Flood Control Study, GIWW Studies High Island to Brazos River, and Brazos to Boggy Bayou.

UPDATE ON MCACES DEVELOPMENT

By Jim Nichols, Huntsville Center

Everyone, we are well into the redevelopment of the new MCACES software. As most of you know by now, Project Time & Cost (PT&C) is the contractor selected for the development of the new MCACES module. Based upon current development schedule, we anticipate distribution of the software in March of 2002.

This MCACES software is actually a subset of the existing MCACES Gold software. Over the next few years, we will continue to enhance the MCACES software to the point that it is all inclusive of the functions currently found in MCACES Gold. Now you are probably asking "What is included in the new MCACES updates, since it doesn't include all the MCACES Gold functionality?" I will try to give you some idea as to what will be included and what is expected to be included in the future.

a. The new MCACES module (Mii) includes most of the basic functionality of MCACES Gold. You will be able to create estimates, compute overhead, compute overtime, and cost to the owner as you have in the past. There are some slight differences in the way contractor's markup and overtime are being applied to the labor rates, but these will be explained closer to the time the software is due to be released.

b. Mii will operate on Microsoft Windows 98, ME, NT, and 2000 operating systems; and projected to operate on XP operating system which has not been officially released to date. Mii will work with databases in either Microsoft Access or Microsoft Sequel Server format.

c. Mii will support simple assemblies and crews as an assembly, but will not at this time, support Smart Assemblies and Modeling Technology. Smart Assemblies and Modeling Technology are expected to be added later.

d. Mii will have the capability to read old MCACES databases and convert them to the new format structure. In fact within Mii, we will have the capability to expand the line item descriptions up to 255 characters. This will work well with the anticipated changes to the UPB. Don't want to get into depth at this time about the UPB, but expect significant changes, which will include the expansion of descriptions to up to 255 characters, this should resolve many of the problems currently

found with the UPB. Also with the conversion capabilities, we will build the capability to convert from certain years UPB to another year UPB database format. We will maintain a multi-year conversion table, which Mii will be able to access and use to convert files.

e. Mii will provide the capability to store pictures and/or parts of drawings along with the estimate. Thus if site visit or if modification is made, can keep up with info that supports the cost estimate.

f. Mii will not support scheduling interface at this time. The software is being developed with this in mind and will be added in the future planned enhancements.

g. Mii will not support interface with Quantity Take-Off Systems at this time. This is planned as an enhancement in the future.

One major difference between Mii and M32 is that the software is being developed from the Cost Engineer viewpoint, not from the software development/maintenance viewpoint. Thus, the software will be much more intuitive thus the learning curve should not be so great.

As the development proceeds, we will keep you informed. As beta releases are made available, we plan to put it on the Web so that anyone who would like to review the software can access it and provide comments back to one of the review team members. Our goal is to try to provide you with a software package, which will not only meet your needs as a cost engineer, but also enhance your capabilities to prepare cost estimates now and in the future.

If you have any comments, suggestions and/or recommendations, please feel free to contact me, James Nichols, at 256-895-1842.

COST ENGINEERING VACANCIES

Baltimore District: Presently recruiting for the following positions:

Mechanical Engr – GS 12
Electrical Engr – GS 12
Architect – GS 12

For information on applying, please contact Frank C. Benvenga, Acting Chief, Cost Engineering Branch, 410-962-6723.

Walla Walla District: Currently advertising for the following:

Mechanical Engr – GS 11

The Walla Walla District deals with large hydropower projects. This position will be involved in all areas of cost engineering including fish passage structures, fish hatchery operations and maintenance. Walla Walla is the lead on many SFO projects as well as National Equipment Pamphlet, Dredging Programs and Civil Works Cost Index System. The Branch is comprised of eleven cost members. For information on applying, please contact Debbie Mallard, personnel at (509) 527-7024 or Kim Callan, Chief, Cost Engineering**.**

Louisville District: There is a potential opening for a GS 12 Electrical Estimator in 2002. They are canvassing to determine level of interest in the potential position. If interested, contact Verle Heindselman, Chief, Cost Engineering, 502-315-6320.

Chicago District: The Chicago District has two (2) Cost Engineering announcements open currently, a GS-11 Cost Engineer and a GS-12 Cost Engineer. These should both be available as internal and external announcements. A new announcement for a GS-11 Engineering Technician is currently being prepared for publication. Dennis Scott (HR) can be contacted regarding these openings at (312)353-6400, Ext. 1007. Also available for additional information on these openings are Guy Marella (ED-C) at (312)353-6400, Ext. 3036 or Linda Sorn (ED-A) at (312)353-6400, Ext.3001.